REMARKS

Status of the Application

Claims 1-3 were pending in the application at the time the Office Action was mailed. Claims 1-3 were rejected. No claims were allowed.

By this amendment, claims 4 and 5 have been added, and claims 1-3 have been canceled. Therefore, claims 4-5 are now before the Examiner for consideration.

Objection to the Specification

The disclosure was objected to for a typographical error. The occurrence of "are" at page 5, line 2 has been amended to "arm" as suggested by the Examiner.

Rejection Under 35 U.S.C. 102 In View of Pommier

Claims 1-3 were rejected under 35 U.S.C. 102(b) as being anticipated by Pommier (FR 2616510 A1). In particular, the Office Action states that:

> Pommier discloses a valve control device comprising a camshaft surrounded by a rotary cam 1 provided with an eccentric or asymmetrical frontal groove 2 accommodating a cam follower or cylindrical pin 7, the cam 1 having lift and descent ramp portions 4, 5 to convert rotary movement of the cam to reciprocating linear movement of through a rocker or connecting rod 6 to open and close valve stems 10, 11 (see English translation abstract, page 1 and top of page 2 and Figure).

In comparison to the presently claimed poppet valve system, Pommier's system lacks a two-component rocker arm/cam follower assembly for mechanically connecting a cam to a valve stem. Instead, Pommier's device uses a horizontal rod to connect a cam directly to two valve stems – an arrangement apparently required to prevent lateral movement of the pin.

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Applicant's two-component rocker arm/cam follower assembly is advantageous over Pommier's single horizontal bar because it (a) allows applicant's system to actuate a single poppet valve per cam groove (thereby maximizing control and minimizing reciprocating mass per poppet valve) and (b) does not require exceptionally precise tolerances to function reliably. In contrast, in Pommier's system (a) the combined mass of the horizontal bar and two valves places exceptional stress on the pin that engages the cam groove and (b) both valves must be perfectly parallel in all planes to avoid excessive friction – a difficult and perhaps impractical engineering feat.

As Bartlogg does not teach or suggest a system featuring a two-component rocker arm/cam follower assembly, withdrawal of this rejection is respectfully requested.

Rejection Under 35 U.S.C. 102 In View of Battlogg

Claims 1-3 were also rejected under 35 U.S.C. 102(e) as being anticipated by Battlogg (U.S. Patent 6,705,262). In particular, the Office Action stated:

> Battlogg discloses a valve mechanism comprising a camshaft 1 having a surrounding element 4 with a follower as a closed rope loop arranged in an asymmetrical groove 16 having lift and descent portions to open and close engine valves through valve shank 11 to valve actuator 10 (column 7, lines 64-67 with column 8, lines 1-5, column 10, lines 20-28, Figures 1-13), the valve being actuated through a rocker arm or lever (column 6, lines 64-65, column 11, line 67 with column 12, lines 1-3).

In comparison to the presently claimed poppet valve system which includes a cam shaft and surrounding region formed as a single unitary structure that includes an asymmetrical cam groove, Bartlogg's system utilizes a conventional *two-piece* cam lobe on carrier shaft arrangement. Although some of Bartlogg's embodiments may include a groove in a cam lobe (see, e.g., the embodiment of Fig. 11), none include a

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groove formed within a unitary cam shaft/surrounding region. For example, Bartlogg's Fig. 11 embodiment features a two-piece system that includes "a closed rope loop which is arranged slideably in a groove in the circumferential surface of the cam element" (col. 7, lines 64-66; see also Fig. 11).

Bartlogg's embodiment also does not include a pin engaging a groove formed in a unitary cam shaft/surrounding region. Rather, Bartlogg employs a hook-like lug engaging the closed rope loop. Accordingly, the operation of applicant's system differs significantly from that of Bartlogg's. In applicant's system, the unitary cam shaft/surrounding region rotates as a single unit causing the pin engaging the groove to move according to the asymmetrical shape of the groove. In comparison, in Bartlogg's system, the cam lobe rotates *within* the rope loop (an event not even possible with applicant's unitary cam shaft/surrounding region) causing the hook-like lug engaging the rope loop to move according to the shape of the cam lobe. The flexibility of the rope loop allows it to continuously deform as it follows the shape of the rotating cam lobe.

Because Bartlogg does not teach or suggest a system featuring a unitary cam shaft/surrounding region that includes an asymmetrical cam groove engaged by a pin engaging the groove), withdrawal of this rejection is respectfully requested.

Rejection Under 35 U.S.C. 102 In View of Folino

Claims 1 and 2 were rejected under 35 U.S.C. 102(e) as being anticipated by Folino (U.S. Patent 6,619,250). In particular, the Office Action stated:

> Folino discloses a desmodromic valve actuation system comprising a camshaft 10 with a cam 11 having an asymmetrical groove or track 20 accommodating a follower or ball 16, the groove 20 having lift and descending portions 25, 26 to

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open and close engine valve 33 (column 5, lines 47-67 with column 6, lines 1-18, Figure 1-4).

Each of the presently pending claims recites a system including a rocker arm assembly. As Folino does not disclose a rocker arm assembly, withdrawal of this rejection is respectfully requested.

Conclusion

The currently pending claims before the Examiner are supported throughout the specification and are patentable over the prior art. No new matter has been added. This application is now in full condition for allowance, and such action is respectfully requested.

The Examiner is cordially invited to call the undersigned if clarification is needed on any matter within this amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

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The Commissioner is hereby authorized to charge any underpayment or credit any overpayment of fees under 37 CFR 1.16 or 1.17 as required by this paper to Deposit Account 18-2262.

Respectfully submitted,

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